[redacted] Secret

Intelligence Report

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Eastern Zaire: Volcanic Activity in Humanitarian Relief Zone

Although volcanic events are difficult to predict, American and Japanese volcanologists analyzing recent seismic events in Nord-Kivu, Zaire, judge that there is a solid basis for concern that a damaging eruption--with both ash plumes and lava flow--could occur there in the near term. [redacted]

A series of events indicate that the Nyiragongo and Nyamulagira volcanoes, 20 kilometers north of Goma, have become more active in recent weeks and may present a threat to residents and refugees in the area. Both volcanoes have been active frequently in this century.

[redacted]

- Ash plumes extending to 100 meters above the western slope of the Nyamulagira volcano--connected by subsurface channels to Nyiragongo--were also reported recently by a relief worker. Japanese seismologists report data indicating ground swelling that could lead to a larger explosive ash plume. [redacted]

A major outflow of lava from Nyirangongo could occur with only minutes of warning, [redacted]

- The last major eruption there took place in January 1977 when a lake of molten lava--that had been smoldering in the crater for half a century--burst through the mountain's north and south flanks through at least five fissures simultaneously, according to Japanese seis..logists. The resultant flow

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moved rapidly—over 50 km per hour—and covered the countryside in the south for a distance of 10 km from the base of the mountain; some farmers were killed.

- The magma that feed both volcanoes is unusually fluid [redacted]

- Although there is a sparse seismic network operated by Zairian and Japanese seismologists, the data is not radioed to a central facility in real-time, and cannot provide warning of the increased activity that generally precedes volcanic events. [redacted]

Refugee camps at the base of the Nyirogongo volcano are partially on the site of the 1977 lava fields, according to American and Japanese volcanologists. Nevertheless, because the regional cluster of volcanoes that includes Nyiragongo and Nyamulagira have subterranean interconnections, lava could emerge from any of many fissures in the region. [redacted]

In the meantime, ash plumes from the volcanoes could threaten aircraft delivering relief supplies.

- In 1991, a South African aircraft lost two of its four engines when it flew through an undetected ash plume from these volcanoes.

- If ash plumes occur, estimated wind speeds and directions for the next two days suggest that aircraft flying above 5,500 meters and to the east of the volcano would be vulnerable. [redacted]